

Highline Community College
Department of Mathematics
Developmental Math (81, 91) Support Packet
Revised 7/17/2010

The purpose of this packet is to provide support for instructors teaching the New Developmental Math courses. We respect an instructor's right to academic freedom and view these materials as advisory rather than prescriptive.

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Guiding Philosophy and Goals for the New Curriculum

We want our developmental mathematics sequence to meet the following criteria:

- Actively (and demonstrably) develop students' reasoning ability (critical thinking/quantitative reasoning), learning habits/attitudes, communication ability, understanding of core concepts in several major strands of mathematics (numeracy, geometry, statistics, algebra, and functions), and skill with essential mathematical techniques (those **routinely used by practitioners** in a wide range of disciplines).
- Feel relevant and useful to the students by providing **in each class** training in a skill or perspective which has immediate application to their lives/current non-math coursework, and reserving intensive training in specialized algebraic techniques for only those who require it (students needing calculus).
- Limit the amount of precollege-level work required for students to be ready for the quantitative demands of college-level coursework.

We see the purpose of mathematics training for non specialists being the development of critical thinking skills, quantitative reasoning ability, and symbolic reasoning ability (e.g. symbols as shorthand, graphical/diagrammatic representations, tabular representations, computation with/simple manipulation of formulas).

Developmental Math Committee Members

If it is your first time to teach the new Math 81 and Math 91, we recommend that you connect with one of the members of the developmental math committee or with a faculty who has taught the courses. They will be happy to share their syllabi, schedules, projects, and assessments with you upon request.

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Course Syllabus and Course Adoption Form (CAFs) for Math 81

Complete information about what to include in your syllabus can be found at

<http://flightline.highline.edu/frc/resources/syllabus/index.htm>. Below are excerpts from the Course

Adoption (CAF) that you might find useful. At Highline, the CAF is the official document for the course, and changes to the course require that the CAF be updated and approved by the division chair and vice-president for instruction. Information from the CAF is included in the course catalog and the quarterly course schedules.

Your syllabus should include the following information found on the CAF: course description, prerequisite information, calculator requirements, student learning outcomes, and the campus wide learning outcomes. In addition, you should include a statement about students with disabilities and an emergency preparation plan.

Course Abbreviation	Number	Computer Entry Title for Quarterly (24 Spaces Only)
Math	081	Introduction to Algebra

Year & Quarter this course was first offered at Highline:	1986	Next CAF review date:	Spring 2013
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Grading System			
<input checked="" type="checkbox"/> Decimal Grade	<input type="checkbox"/> CR/NC	<input type="checkbox"/> Other: (Specify)	

Check Degree Distribution Requirements the Class Meets

Humanities	Soc Science	Math/Science	Lab	Communication	Computation	Phys. Ed.	Diversity & Globalism**	Transferable Elective
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Diversity & Globalism Committee application must be attached. CAF revisions/updates require D&G Committee notification.*

Capacity & Credits

Class Limit	Credit
32	5

Continuous Enrollment

Yes	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>

Number of Contact Hours

Lecture	Lab	Worksite	Clinical	Mixed/Variable	Other
55					

Computer Enforced Prerequisite If Permission, List Criteria	CR in HS 061 or Math 061, or COMPASS Pre-Algebra score above 28
Quarterly Catalog Note	Prereq: CR in HS 061 or Math 061, or COMPASS Pre-Algebra score above 28
Applicable Fees	

Is this a NEW COURSE?	OR	UPDATING or REVISING an existing course?
<p>Yes* <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>*If yes, attach a completed <u>New Course Justification Form</u> to this when submitted.</i></p>		<p>Does this REPLACE an existing course? Yes* <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>*If yes, list <u>number</u> of the course being replaced.</i> _____</p>
<p>Is this for the 2-year Catalog?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>		<p>UPDATING: Check changes being made to the previous CAF for this course.</p> <p>Change Course Title <input checked="" type="checkbox"/> Add/Delete Degree Distribution? <input type="checkbox"/></p> <p>Change Course Credit <input type="checkbox"/> Include or Change Prerequisite? <input type="checkbox"/></p>
<p>Is an Invasive Procedure Used?</p>		

Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	List any other changes made: Some content shifted between Math 81 and Math 91. Course will have an increased emphasis on developing reasoning and critical thinking skills as well as successful math behavior skills.
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FULL COURSE TITLE: <i>(35 Spaces Only for Title)</i>	
Introduction to Algebra	
CATALOG DESCRIPTION:	
A beginning algebra course that develops proficiency in fraction and signed number arithmetic, evaluation of expressions, and solving linear equations in one variable.	
Course Abbreviation and Number	
Math 081	
Who is this course designed to serve?	
Students needing a first algebra course	

Course Outline: <i>(Organization of content)</i>
<ul style="list-style-type: none"> • Arithmetic of fractions and signed numbers • Area and perimeter of circles, triangles, and rectangles and volume of boxes • Pie, bar and line graphs • Evaluation and simplification of expressions • Polynomial arithmetic (division is limited to monomial only) • Solving linear equations up to the level of $ax + b = cx + d$ • Emphasis on applying concepts and skills learned to relationships and formulas in everyday life and other college coursework • Emphasis on developing quantitative reasoning ability and symbolic reasoning ability

Student Learning Outcomes of Course Indicate the desirable results that can be expected to occur from this course experience. <i>(These are usually expressed in measurable and observable terms).</i>		Assessment Methods Outcomes measured by the following: <i>(These categories may be changed.)</i>					
		Portfolio	Examination	Written Assignments	Projects	Oral Presentations	Other (Indicate specifics below)
1.	Describe the meaning of and compute efficiently by hand with basic fractions and signed numbers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Use proportions to perform unit conversions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Describe the meaning of and compute dimensions, perimeters, and areas of triangles, circles, and rectangles, and volume of boxes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Construct and interpret pie, bar, and line graphs as well as be able to interpret most "newspaper-type" graphs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Simplify and evaluate a variety of expressions, including polynomials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Solve linear equations in one variable up to the level of $ax + b = cx + d$	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	Describe and use available resources to be successful in math classes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Identify the goal and relevant information given in a question or task, then describe some of the steps necessary to complete the task	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	Describe her/his reasoning on a task, including sources of confusion or errors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Note: Acceptable assessment tools include group work, portfolios, presentations, projects, and mastery tests.							

	Scale
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College Wide Outcomes (CWO)		4=substantially (key focus)	3=moderately	2=mildly (very limited)	1=not directly addressed	0=not addressed
Indicate the degree to which this outcome is addressed in this course.						
1.	Think critically	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Reason quantitatively	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Communicate effectively	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Civic responsibility in diverse and multifaceted environments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	Information/visual literacy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Course Syllabus and Course Adoption Form (CAFs) for Math 91

Course Abbreviation	Number	Computer Entry Title for Quarterly (24 Spaces Only)
Math	091	Essentials of Intern Alg

Year & Quarter this course was first offered at Highline:	1986	Next CAF review date:	Spring 2013
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Grading System			
<input checked="" type="checkbox"/> Decimal Grade	<input type="checkbox"/> CR/NC	<input type="checkbox"/> Other: (Specify)	

Check Degree Distribution Requirements the Class Meets								
Humanities	Soc Science	Math/Science	Lab	Communication	Computation	Phys. Ed.	Diversity & Globalism**	Transferable Elective
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Diversity & Globalism Committee application must be attached. CAF revisions/updates require D&G Committee notification.

Capacity & Credits		Continuous Enrollment		Number of Contact Hours					
Class Limit	Credit	Yes	No	Lecture	Lab	Worksite	Clinical	Mixed/Variable	Other
32	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	55					

Computer Enforced Prerequisite	1.7 or higher in Math 081 or 085, or COMPASS Pre-Algebra score above 59
If Permission, List Criteria	
Quarterly Catalog Note	Prereq: 1.7 or higher in Math 081 or 085, or COMPASS Pre-Algebra score above 59
Applicable Fees	

Is this a NEW COURSE?	OR	UPDATING or REVISING an existing course?
<p>Yes* <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>*If yes, attach a completed <u>New Course Justification Form</u> to this when submitted.</i></p>		<p>Does this REPLACE an existing course? Yes* <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p><i>*If yes, list <u>number</u> of the course being replaced.</i> _____</p>
<p>Is this for the 2-year Catalog?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>		<p>UPDATING: Check changes being made to the previous CAF for this course.</p> <p>Change Course Title <input checked="" type="checkbox"/> Add/Delete Degree Distribution? <input type="checkbox"/></p> <p>Change Course Credit <input type="checkbox"/> Include or Change Prerequisite? <input type="checkbox"/></p>
<p>Is an Invasive Procedure Used?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>		<p>List any other changes made:</p> <p>Substantial content revision. Course eliminates some content from previous version of Math 91 and adds content previously taught in Math 95 and 97. Course will also have increased emphasis on developing reasoning and critical thinking skills as well as successful math behavior skills. Should help students successfully take college-level classes with less remediation.</p>

FULL COURSE TITLE: (35 Spaces Only for Title)
Essentials of Intermediate Algebra
CATALOG DESCRIPTION:
An intermediate algebra course that develops understanding of functions (linear, exponential, quadratic) as well as proficiency with simplifying expressions involving integer exponents, solving linear inequalities, and solving linear equations in two variables. GRAPHING CALCULATOR REQUIRED: TI-83 or 84 recommended.
Course Abbreviation and Number
Math 091
Who is this course designed to serve?

Students needing algebraic skills such as graphing formulas, using and analyzing function relationships, and basic statistics.

Course Outline: *(Organization of content)*

- Solving linear equations in one variable having many terms, fractional coefficients, and distributing
- Solving linear inequalities in one variable, and expressing results with graphs and interval notation
- Summarizing data sets using mean, median, mode, the five-number summary, and histograms or box plots
- Concept and notation of functions, domain, and range, including exposure to absolute value and piecewise functions
- Features of functions (max/min, increasing/decreasing, positive/negative, intercepts, rates of change), including using compound inequalities and interval notation to describe them
- Linear functions (concept, intercepts, slope, slope-intercept form, constructing from pairs of points, linear regression)
- Facts about vertical, horizontal, parallel, and perpendicular lines
- Solving systems of equations in two variables by graphical estimation and the elimination method
- Exponential functions (concept, intercepts, asymptotes)
- Simplifying expressions involving integer exponents
- Quadratic functions (concept, constructing graphs using intercepts, vertex, and concavity, finding intercepts using the quadratic formula)
- The Pythagorean Theorem and distance formulas, including estimating and computing roots of numbers
- Emphasis on applying concepts and skills learned to situations in everyday life and other college coursework
- Emphasis on developing quantitative reasoning ability and symbolic reasoning ability
- Training in use of graphing calculator throughout course to evaluate, graph, trace, zoom, change window, and perform regression

Student Learning Outcomes of Course Indicate the desirable results that can be expected to occur from this course experience. <i>(These are usually expressed in measurable and observable terms).</i>		Assessment Methods Outcomes measured by the following: <i>(These categories may be changed.)</i>					
		Portfolio	Examination	Written Assignments	Projects	Oral Presentations	Other (Indicate specifics below)
1.	Complete a variety of algebraic tasks, including calculating with radicals, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Define measures of center and spread, then use them to summarize meaningful data numerically and graphically	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Define the concepts of function, domain, and range, then compute and describe features of several function types	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Define and identify slope, intercepts, and slope-intercept form, then use them to describe and construct linear equations and graphs for realistic situations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Define and describe the features of exponential functions, then apply them to realistic situations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Define quadratic functions, then compute features of their graphs and solve quadratic equations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	Describe her/his level of understanding before a formal assessment as well as steps she/he will take to improve	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Describe and consistently apply an effective strategy for solving problems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	Use formal terminology to describe his/her reasoning on a task as well as patterns in his/her errors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Note: Acceptable assessment tools include group work, portfolios, presentations, projects, and mastery tests.							

Scale

College Wide Outcomes (CWO)		4=substantially (key focus)	3=moderately	2=mildly (very limited)	1=not directly addressed	0=not addressed
Indicate the degree to which this outcome is addressed in this course.						
1.	Think critically	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Reason quantitatively	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Communicate effectively	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Civic responsibility in diverse and multifaceted environments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	Information/visual literacy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Textbook and Support Materials

The department coordinator can provide you with the textbook and a sample syllabus.

Text: *Beginning and Intermediate Algebra, 2nd Edition by Rockswold and Krieger.*

We expect students to have a copy of the book by the end of the first week. Copies of the text will be available at the Math Resource Center and the Library.

Online Homework Software:

Students will be using MyMathLab (MML) online for homework and quizzes. To access this online homework system, students will need an access code. The students have the following choices:

- Purchase a new book from the bookstore (*Beginning Algebra MML Edition + MLP Code for \$105.50*) OR
- Buy an individual code from the bookstore for \$80 without a hard copy of the book (with an eBook included) OR
- Buy an individual code from the website. To do this, go to <https://mylabsplus.highline.edu>, enter the course, attempt to access the homework and then follow the instructions in buying the code online.

To complete the online homework, students are expected to go online for approximately 5-8 hours a week. If they don't have internet access at home, then they must establish a schedule for using the computers at Highline (Building 30, or Highline library, or at the Math Resource Center) or at their local library.

It would be useful to provide students with some information on how to log onto MyMathLab. You can copy and paste the following statement into your syllabus.

Logging onto MyMathLab – Go to <https://mylabsplus.highline.edu> and log in using your MyHCC login and password. If you have NOT activated MyHCC you can do so at the helpdesk in Building 30. You will need the access code you purchased to continue.

Assessment Tools

- Online Homework
- Quizzes (either online or pencil-paper)
- Mastery Tests : Two topic-specific skill tests are required (Arithmetic of Signed numbers and Order of Operations, and Linear Equations.) Students must get 80% or better on these tests. If students don't pass the test on the first try, then they are given the chance to retake it twice.
- Exams
- Comprehensive Final Exam

Math 81 Pacing Schedule

Week	Outcomes & Theme	Text Section(s)	Materials Needed
1 & 2	<p>Relevant content outcome(s):</p> <ul style="list-style-type: none"> Describe the meaning of and compute efficiently by hand with basic fractions and signed numbers. Use proportions to perform unit conversions. <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Compute by hand easily with positive rational numbers Unit conversions as a context for proportions 	<p>1.1 – Evaluating expressions, translating words to expressions, creating formulas for everyday tasks, area of rectangles</p> <p>1.2 – Fraction arithmetic, area of triangles</p> <p>PA 9.4, 9.7 and Ch 9</p> <p>Highlights– Linear measurements and unit conversions</p>	<p>SUPPLEMENTS:</p> <ul style="list-style-type: none"> Unit Conversion Sheet with equivalencies (in PA Ch 9 highlights) Additional application practice for fractions. <p>Example of Student Attributes to Focus on:</p> <ul style="list-style-type: none"> Staying organized Personal responsibility (before, during and after class) Time management
3 & 4	<p>Relevant content outcome(s):</p> <ul style="list-style-type: none"> Describe the meaning of and compute efficiently by hand with basic fractions and signed numbers. Simplify and evaluate a variety of expressions, including polynomials. <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Concept development of negative numbers Compute easily by hand signed number arithmetic Evaluation and simplification of expressions 	<p>1.3 Exponential notation, order of operations, evaluate expressions</p> <p>1.5 – Add and subtract signed numbers – applications include money, game statistics, and temperature</p> <p>1.6 – Multiply and divide signed numbers</p>	<p>Example of Student Attributes to Focus on:</p> <ul style="list-style-type: none"> Staying organized Self reflection Time management Perseverance of task <p>MASTERY TEST (signed number arithmetic and order of operations)</p>
5 & 6	<p>Relevant content outcome(s):</p> <ul style="list-style-type: none"> Solve linear equations in one variable up to level of $ax + b = cx + d$ Use properties of real numbers to simplify expressions and solve equations <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Solving linear equations, understanding the “balancing” of equations 	<p>1.7 – Properties of real numbers – applications include volume of boxes</p> <p>1.8 – Simplifying algebraic expressions – applications include volume of boxes and areas of rectangles</p> <p>2.1 – Basic equation concepts, addition and multiplication properties of equality, solution set –</p>	<p>Example of Student Attributes to Focus on:</p> <ul style="list-style-type: none"> Available resources Staying organized Self reflection Study Techniques Test Taking Techniques <p>MASTERY TEST (solving linear equations up to $ax + b = cx + d$)</p>

	<ul style="list-style-type: none"> Continuation of geometry integration More “reality based” instruction to application problems with an emphasis on <p>Perspective – There is a good reason to learn algebra because we can solve real life problems.</p>	<p>several problems going from data => tables => formulas</p> <p>2.2 – solving linear equations, clearing fractions and decimals, equation types of contradictions and identities – applications include $D=RT$ and estimation formulas</p>	
7 & 8	<p>Relevant content outcome(s):</p> <ul style="list-style-type: none"> Identify the goal and relevant information given in a question or task and describe some of the steps necessary to complete the task. Find area and perimeters of rectangles, circles, triangles, and volume of boxes Construct and interpret pie, bar and line graphs as well as be able to interpret most “newspaper type” graphs. <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Geometry of standard shapes Construction of graphs Reading and understanding of “application” graphs – looking for trends, etc. (visual literacy) <p>Perspective – Application and real world approach to statistics and graph reading</p>	<p>2.4 , PA 9.2 and 9.3– Geometry formulas including area regions (rectangles joined or rec + triangle), perimeter and area of circle, surface areas of boxes, and cylinders</p> <p>3.1 – Graphing introduction (rectangular coordinate system), reading graphs (what does a point represent), looking at graphs for trends and geometry of simple shapes</p> <p>PA 8.1 and 8.2 – Bar, line, and circle graphs, scatterplots, histograms, pictographs</p>	<p>SUPPLEMENTS:</p> <ul style="list-style-type: none"> Handout on how to approach solving application problems and worksheets on setting up (not necessarily solving) application problems. Additional practice problems with “real life” applications. Handouts and worksheets with reading “newspaper” type graphs. <p>Example of Student Attributes to Focus on:</p> <ul style="list-style-type: none"> Organization Progress report reading Reviewing for tests Mastery Working with others
9 & 10	<p>Relevant content outcome(s):</p> <ul style="list-style-type: none"> Simplify and evaluate a variety of expressions, including polynomials. <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Polynomial arithmetic Continuation of geometry integration 	<p>5.2 – Polynomial addition and subtraction polynomial terminology</p> <p>5.3 – Polynomial multiplication – applications include surface area of boxes and spheres</p> <p>5.6 – division of monomials</p>	<p>Example of Student Attributes to Focus on:</p> <ul style="list-style-type: none"> Attention to detail Review of attributes and how to focus on what an individual needs

Emphasized throughout the class:

Reasoning Goal(s) from CAF:

- Do I understand what task I am performing?
- Can I explain my reasoning on how to approach the task given to me?
- Can I find an error in someone's reasoning or solution?
- Do I understand the terminology and can I use the terminology correctly?

Student Attribute Goal(s):

- Describe and use available resources to be successful in math classes.
- Identify the goal and relevant information given in a question or task, then describe some of the steps necessary to complete the task.
- Describe his/her reasoning on a task, including sources of confusion or error.

Important to keep in mind:

- Emphasis on understanding
- Emphasis on applying concepts and skills learned to situations in everyday life and other college coursework
- Emphasis on developing quantitative reasoning ability and symbolic reasoning ability

Math 91 Pacing Schedule

Week	Outcomes & Theme	Text Section(s)	Materials Needed
1	<p>Relevant content outcome(s):</p> <p>1. Complete a variety of algebraic tasks, including calculating with roots of numbers, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Solving linear equations in one variable having many terms, fractional coefficients, and distributing Solving linear inequalities in one variable, and expressing results with graphs and interval notation <p>Perspective – Skill review/development</p>	<p>2.2 – Clearing frac/dec; ident/contrad? [Repeating from 81]</p> <p>2.4 – Working with Formulas [Repeating from 81]</p> <p>2.5 – Number line graphs & solving linear inequalities</p> <p>8.3 – Compound inequalities: both “and” and “or” types</p>	<p>Worksheets with additional complexity: different letters, types like $\frac{3(x+8)}{4} = 7x+1$, a few applications</p> <p>Additional info/practice with interval notation</p>
2	<p>Relevant content outcome(s):</p> <p>2. Define measures of center and spread, then use them to summarize meaningful data numerically and graphically</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Summarizing data sets using mean, median, mode, the five-number summary, and histograms or box plots <p>Perspective – Continuing to describe and analyze other types of data (univariate)</p>	<p>PA 5.7 – Measures of Center</p> <ul style="list-style-type: none"> Reason for summarizing data Data for examples – class performance on an exam Purpose & steps for creating a histogram. Reason for interest in single “middle” or “representative” value <p>PA 8.1 - Histograms</p>	<ul style="list-style-type: none"> Definitions of mean, median, mode Reason for interest in spread – include examples of very different histograms having same mean and median Definitions and steps for computing 5 # summary (min, Q1, med, Q3, max) Applications
3 & 4	<p>Relevant content outcome(s):</p> <p>3. Define the concepts of function, domain, and range, then compute and describe features of several function types</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Concept and notation of functions, domain, and range, including exposure to absolute value and piecewise 	<p>8.1 – Definition of a function, the four representations, domain, range, identifying functions (vert. line test, etc.), mentions scatterplots</p> <p>8.2 – Linear functions (no reference to slopes)</p>	<p>DOMAIN & RANGE are NOT emphasized separately in text – will require instructor emphasis. Problem selection involving these concepts is adequate.</p> <p>Additional applications analyzing data sets and</p>

	<p>functions</p> <ul style="list-style-type: none"> Features of functions (max/min, increasing/decreasing, positive/negative, intercepts, rates of change), including using compound inequalities and interval notation to describe them Training in use of graphing calculator throughout course to evaluate, graph, trace, zoom, change window, and perform regression <p>Perspective – Applied, with concepts introduced to highlight or communicate key features; some emphasis on discovering patterns (function families or ???)</p>	<p>& intercepts – can be done independently), very applied, introduces rate of change</p> <p>8.4 – Other functions and their properties, introduces intervals for domain & range</p> <p>IA 2.7 – Piecewise Functions</p> <p>Appendix A – Graphing calculator</p>	<p>graphs, especially piecewise functions, scatterplot data that shows overall trends, or graphs without available formulas (stock market, tides, temperature vs. time or altitude)</p> <p>MASTERY TEST!</p>
5 & 6	<p>Relevant content outcome(s):</p> <p>4. Define and identify slope, intercepts, and slope-intercept form, then use them to describe and construct linear equations and graphs for realistic situations</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Linear functions (concept, intercepts, slope, slope-intercept form, constructing from pairs of points, linear regression) <p>Perspective – Investigating the simplest type of function more deeply</p>	<p>3.1 – Point-plotting, reading graphs, scatterplots</p> <p>3.2 – Graphing formulas</p> <p>3.3 – Intercepts, horizontal, vertical lines</p> <p>3.4 – Slope & rate of change</p> <p>3.5 – Using slope-intercept form, finding eqns of parallel/perp.</p> <p>3.6 – Constructing equations using point-slope form</p> <p>3.7 – Modeling</p> <p>IA 2.6 – Linear Regression</p>	<p>3.1 – Decent contexts</p> <p>3.2 – Decent contexts</p> <p>3.3 – Supplement included applications</p> <p>3.4 – Good applications</p> <p>3.5 – Supplement with explanation of finding equations using sl-int.</p> <p>3.6 – Good applications</p> <p>3.7 – NO regression! MASTERY TEST!</p>
7	<p>Relevant content outcome(s):</p> <p>1. Complete a variety of algebraic tasks, including calculating with roots of numbers, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Solving systems of equations in two 	<p>4.1 – Solving a system graphically; does not include special cases</p> <p>4.2 – Solving a system using substitution, details about special cases</p>	<p>Additional applications and more complex algebraic problems (small, simple coefficients in text)</p>

	<p>variables by graphical estimation and the elimination method</p> <p>Perspective – Competing “forces:” breakeven analysis</p>	<p>4.3 – Solving a system via elimination, mentions special cases</p>	
8	<p>Relevant content outcome(s):</p> <p>5. Define and describe the features of exponential functions, then apply them to realistic situations</p> <p>1. Complete a variety of algebraic tasks, including calculating with roots of numbers, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Exponential functions (concept, intercepts, asymptotes) Simplifying expressions involving integer exponents <p>Perspective – Comparison with linearity: repeated multiplication</p>	<p>12.2 – Exponential functions</p> <p>5.1 – Rules of exponents (no quotient)</p> <p>5.5 – Rules of integer exponents (w/ quotient), scientific notation</p>	<p>More detail about pattern of growth, asymptotic nature</p> <p>More applications of scientific notation.</p>
9 & 10	<p>Relevant content outcome(s):</p> <p>6. Define quadratic functions, then compute features of their graphs and solve quadratic equations</p> <p>1. Complete a variety of algebraic tasks, including calculating with roots of numbers, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations</p> <p>Goal(s) from CAF:</p> <ul style="list-style-type: none"> Quadratic functions (concept, constructing graphs using intercepts, vertex, and concavity, finding intercepts using the quadratic formula) The Pythagorean Theorem and distance formulas, including estimating and computing roots of numbers 	<p>11.1 – Analyzing quadratic graphs (standard form)</p> <p>11.2 – Modeling with parabolas, including vertex form</p> <p>PA 6.4 – Square Roots</p> <p>10.1 – Radical expressions and rational exponents</p> <p>11.4 – Solving with the quadratic formula</p> <p>IA 8.7 – Linear and Quadratic Regression</p>	<p>May be easier to do with a summary handout</p> <p>Applications could be improved</p>

	<p>Perspective – Investigating the simplest type of function more deeply</p> <p>Quadratic functions</p> <p>-Formula approach to concavity, vertex, intercepts, etc.</p> <p>Quadratics & radicals</p> <p>-Solving quadratic equations with the quad. Formula</p> <p>-Basics of square/cube roots</p>		
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1. Describe her/his level of understanding before a formal assessment as well as steps she/he will take to improve
 2. Describe and consistently apply an effective strategy for solving problems
 3. Use formal terminology to describe his/her reasoning on a task as well as patterns in his/her errors
- Emphasis on applying concepts and skills learned to situations in everyday life and other college coursework
 - Emphasis on developing quantitative reasoning ability and symbolic reasoning ability

Math 81 Mastery Test Template: Signed Numbers and Order of Operations

Instructions: You have 15 minutes to complete this test. You may **not** use calculators, books, notes, nor confer with a classmate. When a calculation takes several steps, SHOW AT LEAST ONE of the steps in your solution, and circle your answers if your work gets cluttered.

1. Perform the following calculations. **Use the back of this sheet if you need more space.**

a) $-a(-b)$

b) $a - b$ (where b is greater than a)

c) $-b - (-a)$

d) $\frac{-a}{b}$ or $\frac{a}{-b}$

e) $-b + (-a)$

f) $-a + b$

g) $a(-b)$

h) $a - (-b)$

i) $a + b(c + d)$

j) $a \cdot b \div c \cdot d$ The result should be an integer or fairly simple fraction if c and d are (incorrectly) multiplied together before the division is performed.

k) $\frac{a^b - c}{d \cdot e^f}$ or similar

The fraction should simplify some, but the final result shouldn't be an integer. For

example, $\frac{3^2 - 5}{4 \cdot 2^3}$

Notes: All variables above represent positive integers between 1 and 50. Test should not contain only one digit numbers.

Math 81 Mastery Test Template: Linear Equations

Instructions: You have 20 minutes to complete this test. You may use calculators, but **no** books, notes, nor conferring with a classmate. Part of your grade is based on your ability to communicate your process, so SHOW SEVERAL steps when possible, and circle your answers if your work gets cluttered. If you need more space, attach another page or use the back of this sheet.

1. Solve the following equations if possible.

Overall notes: No decimal or fractional coefficients, no equations with no solution or all real numbers as solution, problems don't have to be presented in this order.

a) $a - bx = cx + d$

One constant term and one term containing variable on each side, no distribution

c) $a(b - cx) = d$

Distribution on one side, constant term on other

e) $a(bx - c) = d + ex - f$

distribution on one side, some like terms on the other

b) $a = bx - c$

Constant on one side, other side requires no distribution and doesn't contain like terms

d) $-ax = b$

negative # times variable=number (positive or negative)

Math 91 Mastery Test With Template: Linear Equations in Two Variables

Instructions: You have 20 minutes to complete this test. You may use calculators, but **no** books, notes, nor conferring with a classmate. Part of your grade is based on your ability to communicate your process, so SHOW SEVERAL steps when possible, and circle your answers if your work gets cluttered. If you need more space, attach another page or use the back of this sheet.

General notes: Problems do not have to be presented in the order shown here. NO PARTIAL CREDIT for incorrect answers.

1. Rewrite the equation $ax + by = c$ in slope-intercept form.

The initial form of the equation should involve only integer coefficients with at least one negative number and the terms can be rearranged so long as the resulting equation still requires at least two steps to solve.

Grading: 2 points – 1 point for correctly isolating y , then 1 point for having the correct answer with two distinct terms (so an answer of $y = \frac{-6x + 5}{2}$ would receive only one point, but $y = \frac{-6}{2}x + \frac{5}{2}$ would receive two points).

2. Find an equation of the line through the points $(_, _)$ and $(_, _)$. Your answer may be left in any of the forms we've studied in class. If you obtain fractions, do not convert them to decimals.

The ordered pairs should involve integer coordinates and include one negative number in each pair so students will encounter the double-negative issue in the slope formula. If you choose to specify a form of the equation in the instructions, this will not change the scoring for mastery, though it may affect how you choose to grade this problem for your course.

Grading: 2 points – 1 point for calculating the slope (the fraction doesn't need to be reduced), then 1 point for writing a correct equation in any correct form. An equation in point-slope form does NOT need double-negatives simplified to receive full credit. An equation in slope-intercept form must be written as the complete equation – showing the calculations for the slope and intercept are not sufficient. An equation in standard form can have fractional coefficients.

3. Find the x-and y-intercepts of the line given by the equation $ax + by = c$. Write your intercepts as ordered pairs.

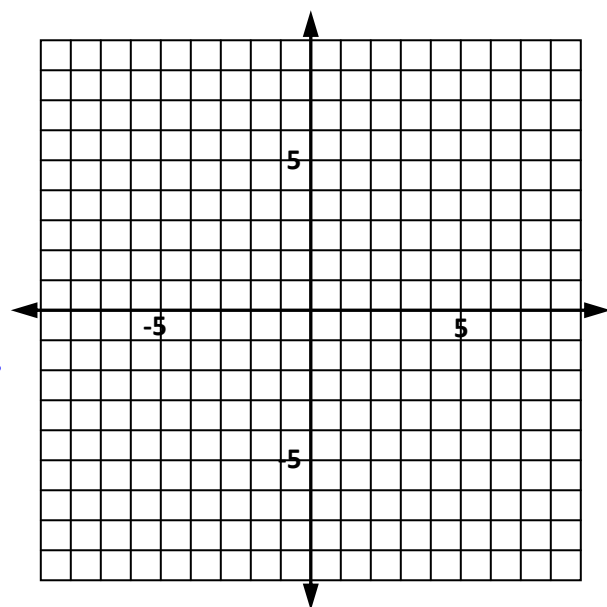
x-intercept: _____ y-intercept: _____

The equation should be in standard form with integer coefficients, at least one of which is negative (like in problem #1). At least one intercept should have a fractional coordinate.

Grading: 3 points – 1 point for correctly calculating the x-coordinate of the x-intercept, 1 point for correctly calculating the y-coordinate of the y-intercept, and 1 point for using ordered pairs and matching the pair with the correct type of intercept.

4. The following tasks are about the equation $y = ax + b$.
- Explain with words and symbols exactly how you use each number in the equation above to quickly create its graph without needing to substitute values for x and compute values for y .
 - Use your description to create the graph on the grid to the right.

The equation should be given in slope-intercept form (terms can be reversed) and the first version of your test should have a negative fraction for the slope. Write the negative in front of the fraction to create the potential for incorrectly applying the sign to both numerator and denominator simultaneously. Subsequent versions of the test may involve positive fractions or integer slopes.



Grading: 3 points – 1 point for words that convey the constant value is a location the line passes through (like “Plot (0,4)” or “Start at –3 on y”), 1 point for describing slope in terms of movement (“rise,” “down,” “over,” “right,” etc.), 1 point for a correct graph (no credit if the middle of the line or at least two points are drawn more than a half-unit from the correct locations). **NOTE:** if the slope is negative, but the student drew a positive slope AND used vague words (like “over” or “run”) in the description for part a, then she/he can earn at most the single point for the intercept. This error pattern often reflects confusion over whether

$-\frac{3}{5}$ means $-\frac{3}{5}$.

Reminder: To pass the test, a student must get 8 or more points.

Sample Math 91 Mastery Test: Linear Equations in Two Variables

Instructions: You have 20 minutes to complete this test. You may use calculators, but **no** books, notes, nor conferring with a classmate. Part of your grade is based on your ability to communicate your process, so **SHOW SEVERAL** steps when possible, and circle your answers if your work gets cluttered. If you need more space, attach another page or use the back of this sheet.

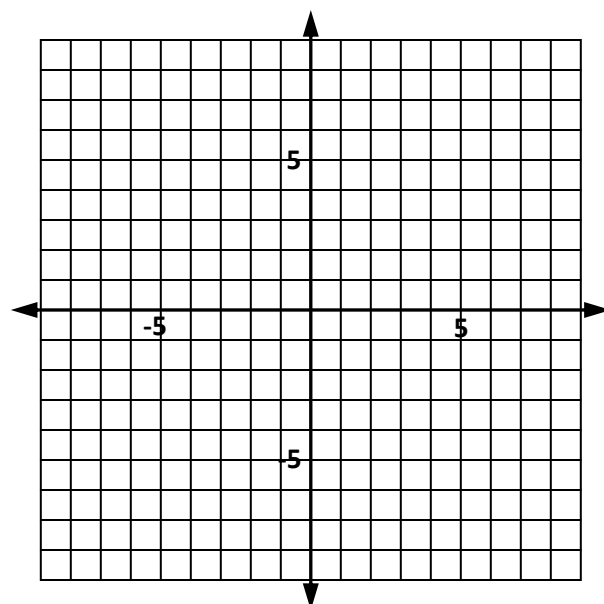
1. Rewrite the equation $4x - 7y = 35$ in slope-intercept form.
2. Find an equation of the line through the points $(2, -7)$ and $(-3, 8)$. Your answer may be left in any of the forms we've studied in class. If you obtain fractions, do not convert them to decimals.
3. Find the x - and y -intercepts of the line given by the equation $-5x + 8y = 10$. Write your intercepts as ordered pairs.

x -intercept: _____

y -intercept: _____

4. The following tasks are about the equation $y = -\frac{3}{2}x - 1$.
 - a) Explain with words and symbols exactly how you use each number in the equation above to quickly create its graph without needing to substitute values for x and compute values for y .

- b) Use your description to create the graph on the grid to the right.



Math 91 Mastery Test With Template: Functions

Instructions: You have 20 minutes to complete this test. You may use calculators, but **no** books, notes, nor conferring with a classmate. Part of your grade is based on your ability to communicate your process, so **SHOW SEVERAL** steps when possible, and circle your answers if your work gets cluttered. If you need more space, attach another page or use the back of this sheet.

General notes: Problems do not have to be presented in the order shown here. NO PARTIAL CREDIT for incorrect answers.

1. Let $f(x) = \dots$ and $g(x) = \dots$.

One function should be a quadratic and the other a 2- or 3-step rational, cubic, or quintic function.

Both should use only integer coefficients and integer input values.

- c) Evaluate $g(x)$ at $x = \text{number}$.

- d) Compute $f(\text{number})$.

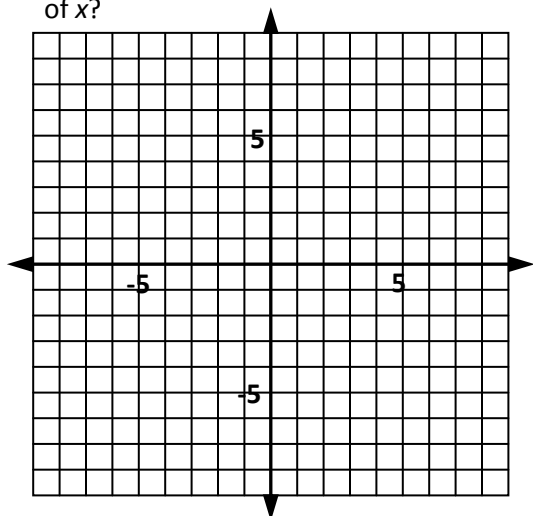
Use a negative value for x with the quadratic function.

Grading: 2 points total – 1 point for each evaluation. Rational expressions may be left unreduced.

2. Answer each of the questions below with either “Yes” or “No.” If your answer is “No,” circle the feature(s) of the table or graph that support your answer, and summarize your reasoning in words.

One of the following should be a function, and one should not. This should vary between retakes.

- e) Does the graph below show y is a function of x ?



- f) Does the table below show D is a function of t ?

t	D

Graphs should be continuous, but not be simple shapes like circles or lines, and parabolas should be

Tables should keep the dependent variable in the right column but use variables other than x and y . There should ALWAYS be repetition in the independent variable's column. (Again, avoid reinforcing the idea “if the input repeats, it's not a function.”) It is fine to use a constant value for at least one entire column.

used with varying orientations, including at an angle. (The goal is to avoid reinforcing the idea “if it looks weird, it’s not a function.”)

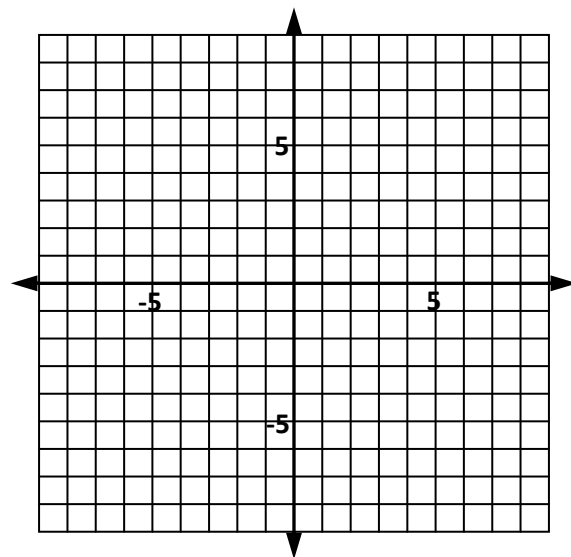
Grading problem 2: 4 points total – 2 points per judgment. For the item that IS a function, the student earns 2 points for saying so. For the item that is NOT a function, the student earns 1 point for saying so, and 1 point for mentioning/circling features that reveal use of the vertical line test or definition of a function.

5. The graph of the function $y = f(x)$ is shown to the right. Use it to answer the following questions.

Use graphs whose domains and ranges are not BOTH $(-\infty, \infty)$, and avoid graphs with asymptotes.

Occasionally use a discontinuous graph with a single obvious gap in the domain. Also make sure the graph clearly crosses at several “nice” values – meaning integers or halves – for the each of the following features.

- a) What is the domain of this function? Write your answer in interval notation.
- b) What is the range of this function? Write your answer in interval notation.
- c) What is the value of $f(\text{number})$?
- d) If $f(x) = \text{number}$, what is the value of x ?



Grading: 4 points total – 1 point per part. For credit on (a) and (b), each interval must include the correct values in the correct order, and use the proper notation – bracket or parenthesis – for both ending values. For part (d), if your graph produces multiple solutions, students need only provide ONE correct value.

Reminder: To pass the test, a student must get 8 or more points.

Sample Math 91 Mastery Test on Functions

Instructions: You have 20 minutes to complete this quiz. You may use calculators, but **no** books, notes, nor conferring with a classmate. Part of your grade is based on your ability to communicate your process, so SHOW SEVERAL steps when possible, and circle your answers if your work gets cluttered. If you need more space, attach another page or use the back of this sheet.

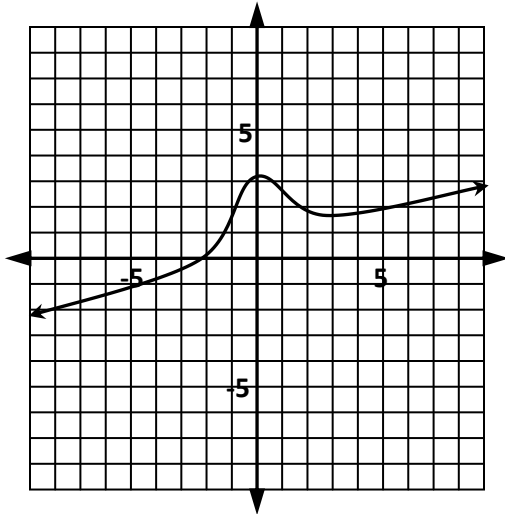
1. Let $f(x) = x^2 - 5x$ and $g(x) = \frac{4}{10-x}$.

a) Evaluate $g(x)$ at $x = 2$.

b) Compute $f(-6)$.

2. Answer each of the questions below with either "Yes" or "No." If your answer is "No," circle the feature(s) of the table or graph that support your answer, and summarize your reasoning in words.

a) Does the graph below show y is a function of x ?

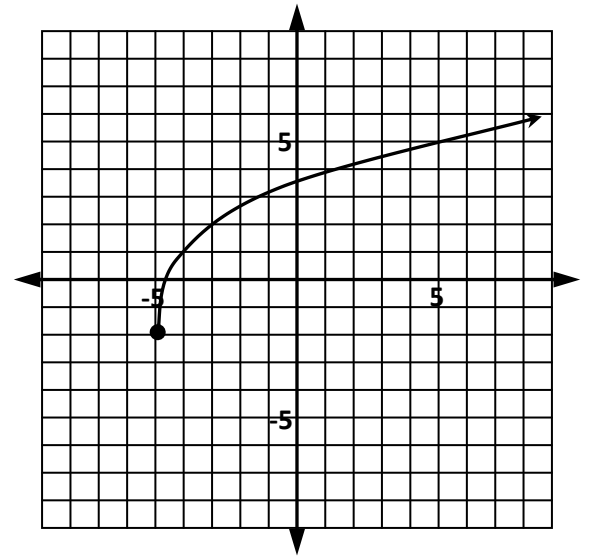


b) Does the table below show D is a function of t ?

t	D
-2	3
5	-1
-8	0
-8	-1
4	3

3. The graph of the function $y = f(x)$ is shown to the right. Use it to answer the following questions.

- a) What is the domain of this function? Write your answer in interval notation.
- b) What is the range of this function? Write your answer in interval notation.
- c) What is the value of $f(7)$?
- d) If $f(x) = 2$, what is the value of x ?



Student Attributes

Student Attribute Training – Diana Lee, Math 81, Spring 2010

WEEK ONE

- First Day - Review Syllabus, show logging into MML, introduction to a notebook organization system
- Midweek – Taking Personal Responsibility (before, during, after class)
- Midweek – Have students bring notebooks and tabs and set them up
- End of Week – Review again Personal Responsibility (before, during, after class) and review logging into MML

WEEK TWO

- Beg of week - Time Management Skills (make their own daily, weekly calendar to include all areas of their lives, review notebook items about time management)
- Midweek – show an example of a “organized notebook”
- End of Week –

WEEK THREE

- Monday (during exam) do a notebook check (organization, inclusion, forms filled out)
- Day after exam – Student fill out self-reflection (concepts understood and study effectiveness)
- End of week – Time management (what does it mean to study effectively?)

WEEK FOUR

- Beg of Week – attention to detail (review how this affects exam grade)
- Midweek – perseverance of task (how it affects self-esteem, passing class, etc.)
- End of week – Know and Use Resources

WEEK FIVE

- Monday (during exam) do a notebook check (organization, inclusion, forms filled out)
- Day after exam – Students fill out self-reflection (concepts understood, study effectiveness, and what could I have done differently to do better)
- End of week – What resources have I used? How did they work? (Class discussion)

WEEK SIX

- All Week – Effective Study Techniques and Effective Test Taking Strategies and their relationship to one another

WEEK SEVEN

- Beg of Week – Monday (during exam) do a notebook check (organization, inclusion, forms filled out)
- Midweek - Review Progress Reports (especially category grades and how they can realize what areas they need to work on improving)
- Midweek – Test Review – why did I miss certain questions? How can I avoid the same kinds of errors on the next exam?

- End of Week – Turn in corrected test problems as well as writing a self-reflection on topic in bullet above this one.

WEEK EIGHT

- Beg of Week – Discuss what mastery means and why it is important (not only for math topics)
- Mid or End of week – Working with others (benefits, drawbacks, effective group work)

WEEK NINE

- Beg of Week – Monday (during exam) do a notebook check (organization, inclusion, forms filled out)
- Mid or End of Week – Review the importance of attention to detail, perseverance of task, and self-reflection.

Notebook (Organizing)

- 3 ring binder with 5 tabs (general info, class notes, weekly work, tests, reflections)
- Gen info (syllabus, attendance, HW, study sheets), Class notes (what I hand out and what they take), weekly work (group and weekend applications), tests (including keys and reworked missed problems), reflections (self-reflections)

Personal Responsibility

- Before class (write down questions to be asked, preread if possible)
- During class (attend, be on time, don't leave early, take notes, ask questions, avoid distractions [cell, who you sit with])
- After class (reread section and notes, do HW, do extra HW if needed, get help [MRC, teacher, online tutor], join/form study group)

Time Management Skills

- Create a schedule (weekly with all info, class time, study time, computer time, group time)
- Use time wisely (better to study some each day, not all at once)

Attention to Detail

- Ordinary - Working problems out (not scratch work on the side) and use correct notation and symbols
- Deeper Thinking – Noticing patterns and repetitions, using and understanding terminology

Perseverance of Task

- Examine and self-correct their own work
- Reflect on the techniques to do the problems
- Don't give up when you can't immediately start a problem or get the wrong answer to a problem

Resources

- Text (Table of Contents, Index, Glossary, End of section and end of chapter summaries and reviews, bold print, highlighted key ideas), can be located in library and MRC
- MML (show my how to work a problem, online tutor, extra problems to work)

- Math Resource Center (location, open hours, what is there, not working – do what?)
- Computer Locations for student use
- Instructor office location and hours

Study Techniques

- Test Preparation Strategies (Reread text sections and your notes, review terminology (flashcards, self-quizzing, minimize distractions while studying, work problems under time constraints), work practice tests/quizzes, review of objectives and concepts)
- Test Taking Strategies (read test through before starting, work easy problems first, write out your steps in readable form, check your work)
- Reflection (Examine tests after taking, looking for errors and patterns of their own learning, Be able to articulate about what work they have done on a problem and/or where they are stuck, Be able to articulate about their learning in the class, Take responsibility for their actions or lack of)

Mastery

- Understanding well enough to teach someone else.
- Using correct terminology and knowing what directions are important to have.

Working with Others

Explaining concepts helps cement them in your mind, use correct terminology, learn how to ask questions (not just I don't get it, but be specific and pinpoint what you don't know or need help on), be accountable to others (study group, study together time), rephrasing what others say helps to check understanding, working together is a work training goal.

Other Classroom Materials

The following materials were used by some faculty in Math 81 during the quarter that this class was piloted.

- Course Calendar
- Assignment Chart
- Attendance Sheet
- Math 81 Notebook Contents
- Math 81 Notebook Check
- Self-Reflection Assignments
- How to succeed in A Math Class
- Sources of Data and Important Websites

Math 81 Weekly Schedule Spring 2010 Diana Lee

Due Dates for MML, applied problems, group activities, and tests

Quizzes are NOT available after due dates, HW is counted late after due dates

Monday	Tuesday	Wednesday	Thursday
March 29	30	31	April 1
			1.1, 1.2 MML HW Group Activity
5 1.1, 1.2 MML Quiz Week 1 app problems	6	7	8 9.4, 9.7 MML HW Group Activity
12 TEST ONE: 9.4, 9.7 MML Quiz Week 2 app problems	13	14	15 1.3 MML HW Group Activity
19 1.3 MML Quiz Week 3 app problems	20	21	22 1.5, 1.6 MML HW Group Activity
26 TEST TWO: 1.5, 1.6 MML Quiz Week 4 app problems	27	28	29 1.7, 1.8 MML HW Group Activity
May 3: 1.7, 1.8 MML Quiz Week 5 app problems	4	5	6 2.1, 2.2 MML HW Group Activity
10 TEST THREE: 2.1, 2.2 MML Quiz Week 6 app problems	11	12	13 2.4 (9.2 9.3)MML HW Group Activity
17 2.4 (9.2 9.3)MML Quiz Week 7 app problems	18	19	20 3.1, 8.1, 8.2MML HW Group Activity
24 TEST FOUR: 3.1, 8.1, 8.2MML Quiz Week 8 app problems	25	26	27 5.2, 5.3 MML HW Group Activity
1 Holiday - No class	June 1 5.2, 5.3 MML Quiz	2	3 5.6 MML HW Group Activity
TEST FIVE – 10 am	8	9	10

Math 81 Spring Quarter 2010 Attendance

Put a checkmark if you are in class that day. Circle the check if you arrived on time and did not leave early. Mark each square with an X if you missed class.

Monday	Tuesday	Wednesday	Thursday	Friday
March 29	30	31	April 1	April 2
5	6	7	8	9
12	13	14	15	16
1	20	21	22	23
26	27	28	29	30
May 3	4	5	6	7
10	11	12	13	14
17	18	19	20	21
24	25	26	27	28
Holiday - No class 31	June 1	2	3	4
7	8	9	10	11

Math 81 Assignments/Worksheets Chart

This chart will help organize your assignments or worksheets and will help you keep track of the dates they are due in one location.

Date Assigned	Assignment	Date Due	Date Completed	Grade

Math 81 Binder Contents

Tab 1: General Information

- Attendance Sheet
- Syllabus
- Assignment Sheet

Tab 2: Class Notes and Handouts

- All class notes (labeled with section title and arranged in order)

Tab 3: Assignments and Worksheets

- Reading and writing assignments in order (arranged by dates)
- Graded worksheets

Tab 4: Tests

- Returned tests
- Answer keys
- Error Analysis of tests

Math 81 Binder Check #1**Name** _____

Date: April 27, 2010

Tab 1: General Information

- Attendance Sheet _____ number of days missed
- Assignment Sheet _____ information recorded
- Syllabus _____ yes / no

Tab 2: Class Notes and Handouts

- All class notes _____ yes/no (labeled with section title and arranged in order)

Tab 3: Assignments and Worksheets

- Reading and writing assignments in order (arranged by dates) _____ is it all there in decent order yes / no
- Graded worksheets _____ yes/no

Tab 4: Tests

- Returned tests
- Answer keys

Tab 5: Other Documents

Binder Check #1 Score: _____

Math 81 Personal Reflection 1

We have finished test 1 and finished almost a 1/3 of the quarter!! Time is flying.

Reviewing our goals:

- Reviewing and learning some concepts in mathematics (so far fraction arithmetic, order of operations, exponents, and adding/subtracting signed numbers))
- Learning Critical thinking skills and learning to persevere through difficult problem solving.
- Learning/Reviewing techniques to help you succeed both in math 81 and in college in general
- Learning how we learn as individuals

To review for yourself (and for me) please answer the questions below:

Concepts in Math

- Do you understand how to add/subtract/multiply/divide fractions? Yes/No (circle answer)
- Did your test reflect this knowledge (specifically questions 2, 3, 13)? Why or why not?

- Do you understand how to convert between units using given conversion charts? Yes/No (circle answer)
- Did your test reflect this knowledge (specifically questions 5, 6, 7, 8, 11)? Why or why not?

Critical Thinking Skills and Persevering through Difficult Problem Solving

These skills were tested in problem 10. If you didn't try working the problem, why not? What stumped you? Did you give up quickly? (Note – There is no correct answer to these questions, but a chance for you to reflect on your reaction to the problems.)

OVER

Math 81 and College Success

- Are you filling out the attendance, study time and assignment sheets? Yes/no (circle answer)
- Are you keeping your notes together, labeled and in order in your notebook? Yes/no (circle answer)
- Are you current in My Math Lab? Yes/no (circle answer)
- Are you using your notes to help you work problems in My Math Lab? Yes/no (circle answer)
- How are you doing at the “basic student responsibilities” – before class, in class, after class? Which ones (if any) are the most difficult for you? What could you do to increase your ability (or desire) to do them?

- Have you taken advantage of any of the school resources? Teacher office hours, MML email, regular email, MRC? Others? Indicate which and if they were of any help.
- What else do you think could help you succeed in this class?

Math 81 – Personal Reflection 2

We have finished test 2 and are half way through the quarter!!

Reviewing our goals:

- Reviewing and learning some concepts in mathematics (so far fraction arithmetic, order of operations, exponents, and adding/subtracting signed numbers))
- Learning Critical thinking skills and learning to persevere through difficult problem solving.
- Learning/Reviewing techniques to help you succeed both in math 81 and in college in general
- Learning how we learn as individuals

To review for yourself (and for me) please answer the questions below:

Lastest Concepts in Math

- Do you understand how to add and subtract signed numbers? Yes/No (circle answer)
- Did your test reflect this knowledge (specifically questions 1b,c, e, g, 2f)? Why or why not?

- Do you understand how to multiply and divide signed numbers? Yes/No (circle answer)
- Did your test reflect this knowledge (specifically questions 1a,d, f, 2e)? Why or why not?

- Do you understand how to perform order of operations? Yes/No (circle answer)
- Did your test reflect this knowledge (specifically questions 1h, i, j, 2d)? Why or why not?

OVER

Critical Thinking Skills and Persevering through Difficult Problem Solving

These skills were tested in problem 4, 6, 7, 8. Did you get the applications correct? If not what was the biggest challenge?

Math 81 and College Success

- Are you satisfied with your test scores? Yes/no (circle answer)
- Did you complete all the MML homework on these sections before the exam? Yes/no (circle answer)
- Did you complete all the MML sections before the exam Yes/no (circle answer)

- Did you get help with the concepts you did not understand? Yes/no (circle answer)

Goal Setting: Set 2 goals that will help you achieve the best grade you can on test 3.

Goal 1: _____

Goal 2: _____

Math 81 Personal Reflection 4

We have finished test 4 and have only 8 more class days to go! Please answer the questions below.

Concepts in Math (New concept learning and review of concept learning)

- Did you remember how to simplify expressions and solve equations (page 1 of test 4) and decide what type of problem you were working? If not, what is the stumbling block for you?
- Do you see applications for the geometry we learned in your personal life? What are some?
- Do you see applications for the graphs we learned in your personal life? What are some?

Critical Thinking Skills and Persevering through Difficult Problem Solving

These skills were tested in the last problem on the test which asked you to put to extract information and then use your reasoning skills to answer the questions. Do you think you did this successfully? Did you persevere or work longer at it than you might have earlier in the quarter or before taking this class? Why or why not?

OVER

Math 81 and College Success - Some students are not attending class daily. If you do not attend daily, what are the reasons? Do you see this as a hindrance toward getting the best grade possible and understanding the material?

Individual Learning Success - What study skills we have covered in class this quarter are you finding most useful? Circle and indicate how they have been useful.

- Organization (such as notebooks)
- Time management
- Personal responsibility before, during, and after class
- Personal reflections (to help you think about what works for you)
- Resources (what help is available)

- Attention to detail
- Test studying techniques
- Test taking techniques
- Math studying techniques
- Working in Groups

Individual Learning Success - What classroom activities or structures have helped you succeed this quarter? Circle and indicate why/how they have helped.

- Structure of class (similar weekly schedule – HW due Th, Q due M, group on th, etc)
- Class calendar showing due dates and test dates
- Group Work
- Lectures
- Worksheets for lectures
- Weekend applications
- Class Discussions
- Mastery tests
- Testing often
- Other _____

How to Succeed in a Math Class

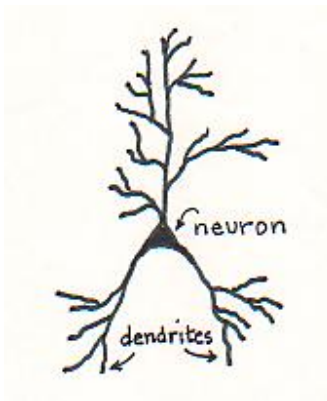
The first two pages of this handout reproduce parts of a presentation about the brain given by Diana Hestwood and Linda Russell of Minneapolis Community and Technical College.

This is your brain...



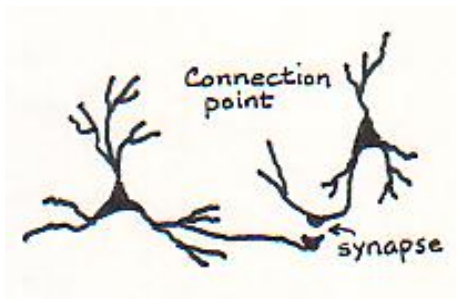
- ☐ Brain cells are called **neurons**.
- ☐ You are born with about 200 billion neurons.
- ☐ **Dendrites** (fibers) grow out of the neurons when you listen to/write about/talk about/practice something.

Learning is natural!



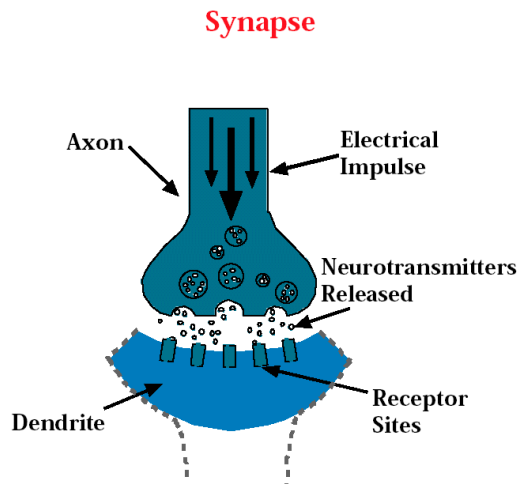
- ☐ Neurons know how to grow dendrites, just like a stomach knows how to digest food.
- ☐ **Learning = Growth of dendrites.**
- ☐ New dendrites take time to grow; it takes a lot of practice for them to grow.

Connections form between neurons.



- ☐ When two dendrites grow close together, a contact point is formed. A small gap at the contact point is called the **synapse**.
- ☐ Messages are sent from one neuron to another as electrical signals travel across the synapse.

Practice builds strong connections!



- ☐ Special chemicals called **neurotransmitters** carry the electrical signals across the synapse.
- ☐ When you practice something, the contact area at the synapse grows wider and there are more neurotransmitters. It becomes easier for the signals to cross the synapse.
- ☐ You grow dendrites for **exactly** the same thing you are practicing.
- ☐ If **you listen or watch** while math problems are solved, **you grow dendrites for listening or for watching**.
- ☐ If **you actually solve** the problems yourself, **you grow dendrites for solving**.

Key ideas to remember when trying to learn:

Dendrites cannot grow in a void!

- ☐ New dendrites can only grow off of what is already there, so new skills need to connect to, and grow off of, previously learned skills.
- ☐ If you do not have the necessary dendrites in place, when you try to learn new material, it will seem to go “right over your head.” (You won’t make a connection.)
- ☐ If you learn something new and do it only once or twice, the dendrite connection is very fragile and can disappear within hours. You need to practice regularly.

Things you can do.

- ☐ Make sure you are actively DOING something when you study.
 - ☐ Make study cards.
 - ☐ Draw pictures or diagrams.

- ☐ Solve lots of problems; check your answers.
- ☐ Check your understanding by explaining how to do a problem to another student.
- ☐ Create a practice test for yourself. Work it in the same amount of time you'll be given in class.

Here are some specific ideas to remember about several aspects of “studying.”

- **Vague doesn't help** – how do you fix something if you don't describe exactly what's going on? Think about how these examples aren't really helpful:
 - My computer's busted. My car's busted. My boss is a jerk. I don't get this stuff.
 - I studied, but still got a bad grade.
 - My goal is to pass this class. [Great! But how do you make that happen?]
- **We think in words and pictures**, not math symbols – you have to **turn math into a story** that has main ideas, vocabulary, and procedures.
 - For each section, be able to state from memory (1) the big idea/purpose of that section, (2) two or three concepts, which may include definitions or theorems, and (3) all the steps of two or three techniques. **Create and memorize note cards with this information.**
- **Explain your ideas to others** – try to describe what you learned in class, summarize the textbook, or explain how to do certain techniques or problems to someone who is willing to listen (and even better, ask questions like “what do you mean by ...?”). This forces you to **process** the information, forming the all-important dendrites and synapses.
- **Be active** – growing dendrites (“learning”) requires you to do exactly what you want to learn
 - **HOW do you use class time?** If you just listen to lecture and write down a few things, how is that different from watching TV? You just trained your brain to listen to someone talking about math, NOT how to DO what they were talking about. (Can you make a meal by watching an hour-long cooking show?)
 - Alternative: Write more words so you capture ideas for later.
 - Next to each step of an example, write words describing the step.
 - Write key phrases/sentences/words the instructor uses several times.
 - Write questions or make a mark next to things that confuse you.
 - **HOW do you use your notes?** Just looking at them or comparing the notes to homework problems only trains you to handle a matching task.
 - Complete your notes: as you read through them, finish examples, write comments about key ideas, fill in gaps using the textbook, and write questions you can ask or look up later. This helps you review the flow of ideas and find gaps or ideas you don't understand.
 - Look for and explain similarities and differences between your notes and the book's examples and homework problems.

- **HOW do you use your book?** Reading it one sentence at a time like a novel often obscures the big ideas and puts people to sleep.
 - Read with a pencil and paper handy: Write summaries of each section that include descriptions of the main ideas in your own words, major vocabulary words and their exact definitions, and the purpose and steps of each technique in the section.
 - Do the examples from the book on a new page without looking back, then find out exactly which steps are causing you difficulty.
 - Write the questions that are in your mind in the book next to the words or example that caused confusion.
 - Explain to yourself how steps of the examples show the ideas written in words.

- **HOW do you do homework?** Focusing on getting it done doesn't help you learn – putting the answers on the paper is about taking information FROM your mind, not putting it INTO your mind.
 - When you get several problems wrong in a row, STOP! You're *training* your brain to do the problems incorrectly. Instead, write down questions describing exactly what part confuses you, or how you interpreted each step of the technique. You'll find this detail makes it easier to fix your own errors, and it also makes it easier for others to help you.
 - Write down how many problems you needed your notes or the book to help you do. Just put a mark next to the problem number each time you looked something up. This tells you how well you've memorized the material.
 - Write down how many problems you got wrong on the first try – this tells you how well you understood the material. If you had to fix more than two or three problems, you will probably make mistakes on the exam.
 - If you begin doing the problems without thinking, your brain is no longer learning. (This is a good thing if you're getting all of them right!)
 - Rewrite your homework in an organized manner with the middle steps – it helps you review and reinforce the ideas, as well as catch mistakes.

- **HOW do you prepare for/take tests?** Cramming facts into your brain and hoping for the best isn't a good strategy.
 - Take time to memorize definitions, properties, and steps of techniques.
 - AFTER memorizing, make up practice tests and do it with a time limit (use a watch or cooking timer) – how much can you do without mistakes or notes?
 - When you get your test, write down important facts you don't want to forget BEFORE you try to do the problems on the test.
 - If you get stressed/blank out, pause to breathe and stretch your neck and shoulders – the adrenaline from stress gets stuck in your brain and blocks the neurotransmitters from crossing between dendrites!

- **If your brain wanders, take a break, eat, drink, walk, etc.** You have to re-engage your brain so it's actually forming connections again.
- **Don't try to do all this at once** – remember, it takes a while to develop a new habit and make it work well, so focus on doing one or two new techniques consistently.

Program Guide For Math 91 Instructors

Principles to Remember and Follow Throughout the Quarter

- **The learning outcomes and philosophy described here are what define the course, NOT the book.** (The book is a **tool** to help you accomplish the outcomes, not instructions for getting there.)

Your focus should be on

- Developing students' ability to learn effectively – learn from course materials, monitor and analyze own learning, persevere on complex tasks
- Developing students' ability to describe and investigate the world around them using mathematical tools
- Learning what needs and experiences your students have that mathematical reasoning and techniques can address
- Arranging and approaching the mathematics content in a way that serves the above purposes
- Honestly examining patterns in your students' achievement and adjusting your pedagogy accordingly
- Discussing and sharing your ideas, concerns, and materials with others

Notice that this list does not emphasize teaching the minutia of each mathematical topic – our goal is to teach the powerful ideas and techniques thoroughly, and leave some of the special cases, specialized techniques, or alternative methods for students needing training in calculus.

Official Student Learning Outcomes for Math 91

1. Complete a variety of algebraic tasks, including calculating with roots of numbers, simplifying exponential expressions, and solving linear equations, inequalities, and systems of linear equations.
2. Define measures of center and spread, then use them to summarize meaningful data numerically and graphically.
3. Define the concepts of function, domain, and range, then compute and describe features of several function types.
4. Define and identify slope, intercepts, and slope-intercept form, then use them to describe and construct linear equations and graphs for realistic situations.
5. Define and describe the features of exponential functions, then apply them to realistic situations.
6. Define quadratic functions, then compute features of their graphs and solve quadratic equations.
7. Describe her/his level of understanding before a formal assessment as well as steps she/he will take to improve.
8. Describe and consistently apply an effective strategy for solving problems.
9. Use formal terminology to describe his/her reasoning on a task as well as patterns in his/her errors.

Sample Schedule for 8-week Summer Session

Reminder: You'll notice most topics have a significant mix of sections from various books, making it all the more important that **you maintain a clear overall theme and train your students in how to learn from the materials they are given.**

Week	Topics	Online "Unit"	Book Sections PA = Martin-Gay Prealgebra IA = Martin-Gay Int Algebra # only = Rockswold/Krieger
1	<ul style="list-style-type: none"> Online setup & orientation Begin learning training, such as prereading, creating/maintaining a notebook/binder for class, monitoring habits or error patterns Solving "challenging" equations (fractions, distributing, multiple variables) Concept of inequality (especially as more common than equality in real applications – think about situations students are likely to encounter that will generate the "divide by negative/reverse inequality" issue) Solving inequalities, plus visual and symbolic representation of solutions <May extend to Mon of Week 2> 	A: Equations and Inequalities	2.2 (also in 81) – Solving equations 2.4 (also in 81) – Using formulas 2.5 – Linear inequalities 8.3 – Compound inequalities (& interval notation; emphasis is describing bounded intervals and unions of multiple intervals for later use with domains, NOT algebra or logic of unions/intersections)
2	<ul style="list-style-type: none"> Continue/extend learning training: teach students to evaluate their level of understanding and create an action plan, describe thinking and error patterns, consistently using a problem-solving strategy Initial training on graphing calculator? Summarizing data using measures of center and spread, and why we have multiple ways Summarizing data visually using histograms Drawing conclusions from summaries of data 	B: Intro to Statistics	PA5.7 – Measures of center PA8.1 – Graphs (used for frequency tables & histograms) You will need to create/find: Descriptions of simple measures of spread – range and quartiles You may want to refer students to Appendix A or "Learning Aids" section of MML for graphing calc help
3	<ul style="list-style-type: none"> Continue/extend learning training: self reflection on learning and habits, concept of perseverance, train attention to detail Evaluate a formula to create a graph 	C: Functions	3.2 – Graphing linear equations (by generating a table of values)

	<ul style="list-style-type: none"> • Use of graphing calculator to create and examine graphs • Concept of a function (tabular, graphical, symbolic, verbal), domain, range • USE real data tables and graphs! • Analysis/description of features of a variety of functions (max/min, intercepts, pos/neg, increasing/decreasing, rate of change visually) <p><May extend to Tue of Week 4></p> <p>MASTERY TEST REQUIRED</p>		8.1 – Intro to functions Appendix A – Graphing calc 8.2 – Linear functions 8.4 – Other functions (abs val, polynom, rational; ignore solving for domain of rat'l fns and alg of functions) IA2.7 – Piecewise functions (ignore transformations)
4	<ul style="list-style-type: none"> • Continue/extend learning training • Concept, significance, and identification of intercepts (tabular, graphical, symbolic) • Concept, significance, and identification of slope (tabular, graphical, symbolic) • Concept of linear growth/decline • USE real data tables and graphs! • Graphing with, interpreting, and constructing equations of lines (primarily slope-intercept form) • Creating regression lines for extrapolation or interpolation of data <p><May extend to part of Week 5></p> <p>MASTERY TEST REQUIRED</p>	D: Linear Functions and Equations	3.3 – Intercepts (go light on vertical & horizontal lines) 3.4 – Slope and Rate of Change 3.5 – Slope-intercept form (go light on parallel & perp lines) 3.6 – Point-slope form (if need – can teach students to construct eqns using slope-int form) 3.7 – Intro to modeling (Sec. 3.1 introduces scatterplots) IA2.6 – Linear regression (using calculator)
5	<ul style="list-style-type: none"> • Continue/extend learning training • Concept/purpose of systems of equations • Solving graphically • Solving by elimination 	E: Systems of Equations	4.1 – Solving graphically 4.2 – Solving by substitution (not teaching substitution – section included for details on ways lines can intersect) 4.3 – Solving by elimination
6	<ul style="list-style-type: none"> • Continue/extend learning training • Concept of exponential growth/decay • USE real data tables and graphs! • Graphing with, interpreting, and constructing exponential functions • Properties of exponents • Meaning of negative exponents • Scientific notation (apply to finance – per-capita amount of national debt, interpreting calculator, student-accessible science – biology, geology, astronomy, possibly chemistry) <p><RETAKES OF MASTERY TESTS?></p>	F: Exponential Functions	5.1 – Rules of exponents (quotient rule in 5.5) 5.5 – Integer exponents & scientific notation 12.2 – Exponential functions
7	<ul style="list-style-type: none"> • Continue/extend learning training • Concept of quadratic behavior 	G: Quadratic	11.1 – Graphs of Q.F. and transformations

	<ul style="list-style-type: none"> Transformations of graphs and the connections between features of equation and actions on a graph Concept of and calculation with square roots Calculation with other roots and connection to exponents <p>Note: Sections PA6.4 & 10.1 are not covered in their entirety. The focus is on students being able to compute numerically with radicals and convert between radical and exponential notation. (Relevant problems from these two sections are in a single HW set.)</p> <ul style="list-style-type: none"> Solving quadratic equations using the quadratic formula USE real data tables and graphs! Creating regression lines for extrapolation or interpolation of data <p><May extend to part of Week 8></p>	Functions	<p>11.2 – Vertex form and its use in modeling (NOT completing the square)</p> <p>PA6.4 – Square roots (computing & Pythagor. Thm)</p> <p>You will need to create/find:</p> <p>Info/apps about distance form.</p> <p>10.1 – Radical expressions (Computation of other roots, connection to rat'l exponents)</p> <p>11.4 – Quadratic formula</p> <p>IA8.7 – Quadratic (and linear) regression</p>
8	<p>Spillover, projects due, self-reflection??</p> <p>Final exam occupies Thursday's class, and potentially some of Wednesday.</p>		

Mastery Tests

The new Math 81 and 91 courses have mastery requirements for students to be **ELIGIBLE** to pass the class. (Their overall percentage in your class must also be at a passing level – presumably above 70 to 75% – so passing these tests are a necessary but not sufficient condition to pass the course.) In Math 91, a student must demonstrate mastery of the basics of **functions** and **linear equations**.

Here are the basic expectations of instructors:

- Mastery tests will be constructed following a common template (included on subsequent pages of this document).
- Students are guaranteed three opportunities to take each mastery test in class. (It is often easiest to incorporate two of the attempts into midquarter exams and the final, with one additional attempt possibly taking the form of a quiz.)
- Instructors may test individual students a fourth time if there is reason to suspect the result will be different.
- No partial credit is awarded – a task is either completed successfully or it's not.
- Students must achieve 80% or higher (without rounding) to demonstrate mastery.
- Once a student demonstrates mastery, it cannot be "revoked" by a poor subsequent performance, though that can certainly affect the student's overall percentage in your class.

Data Reporting

To systematically evaluate this new curriculum, all instructors will provide certain data to Helen Burn, who is our program's analyst. We hope instructors will share data with each other, since this was very helpful in sparking faculty discussion about pedagogy that was helping students achieve the learning outcomes. Plan to provide the following data:

Enrollment/Participation –

- 10-day headcount (report both the number of students appearing on your instructor briefcase AND the number of students who you consider “real” based on attendance)
- 30-day headcount
- Final headcount (official and the number of students who take your final exam)

Achievement –

- Total number of students demonstrating mastery on each test – after the first attempt, second attempt, etc.
- Number of students who passed both mastery tests by the end of the course
- Number of students who passed the class with a 2.0 or higher

Collaboration

Because our curriculum includes expectations that are not traditionally part of our training as mathematics faculty, it is vital we work together to establish a common understanding of the program's goals and expectations, as well as to identify promising instructional practices. At the simplest level, this involves each of us proactively sharing the materials we create and engaging in frequent, sustained conversations about our thinking and experiences. In formal terms, we will be participating in what is called a “faculty learning community” or “faculty inquiry group.” It will involve two main components:

- Regular communication and sharing of ideas and materials – partly through an electronic forum involving email and discussion boards, and partly in person
- Observations of each others' classes

The exact details are still being worked out, and will be guided by your ideas and feedback as we move forward.

Sources of Data and Important Websites

- Census website, <http://www.census.gov/>
- National Weather Service, <http://www.weather.gov/>
- Free graphing program (MathGV), <http://www.mathgv.com/>
- National Automobile Dealers Association,
http://www.nada.org/Publications/NADADATA/monthly_sales_recap/
- Washington State Office of Financial Management,
<http://www.ofm.w.gov/trends/tables/fig506.asp>
- Nielsen Media Research, <http://www.nielsenmedia.com>

Data Tables for Use in Class

CDC's Assisted Reproductive Technology Success Rates for 2005

(<http://www.cdc.gov/ART/ARTReports.htm>)

2005 PREGNANCY SUCCESS RATES				
Type of Cycle	Age of Woman			
	<35	35-37	38-40	41-42 ^c
Fresh Embryos from Nondonor Eggs				
Number of cycles	41,302	22,624	19,482	8,997
Percentage of cycles resulting in pregnancies	43.1	35.7	26.8	17.6
Percentage of cycles resulting in live births ^b	37.3	29.4	19.7	10.6
Percentage of retrievals resulting in live births ^b	40.6	33.4	23.2	13.1
Percentage of transfers resulting in live births ^b	43.4	35.9	25.4	14.9
Percentage of transfers resulting in singleton live births ^b	27.9	24.9	19.0	12.7
Percentage of cancellations	8.2	11.8	14.8	19.0
Average number of embryos transferred	2.4	2.6	3.0	3.2
Percentage of pregnancies with twins	32.9	27.3	21.5	13.4
Percentage of pregnancies with triplets or more	4.4	5.0	4.4	2.5
Percentage of live births having multiple infants ^b	35.6	30.9	25.1	14.5
Frozen Embryos from Nondonor Eggs				
Number of transfers	9,575	4,801	2,896	972
Percentage of transfers resulting in live births ^b	31.7	27.7	23.3	15.9
Average number of embryos transferred	2.4	2.4	2.5	2.7
All Ages Combined^d				
Donor Eggs	Fresh Embryos		Frozen Embryos	
	9,649		4,997	
Number of transfers	52.3		30.9	
Percentage of transfers resulting in live births ^b	2.3		2.6	
Average number of embryos transferred				

WA Office of Financial Management 2007 Data Book (<http://www.ofm.wa.gov/forecasting/default.asp>)

Sport Fishing Statistics (<http://www.ofm.wa.gov/databook/environment/vt06.asp>)

SPORT FISHING STATISTICS

Source: Department of Fish and Wildlife (360) 902-2200

Internet Homepage: <http://www.wdfw.wa.gov/>

Calendar Year	Sport Steelhead Catch		Sport Salmon Catch		
	Summer Run	Winter Run ¹	Marine Angler Trips	Marine	Freshwater
1989	57,141	55,695	1,270,659	710,543	121,417
1990 ³	52,057	33,452	1,240,742	716,209	107,934
1991 ³	62,874	59,878	1,171,239	789,754	153,719
1992 ³	84,732	68,904	892,598	479,163	90,032
1993 ³	67,567	39,044	1,010,030	451,819	147,542
1994 ³	48,513	67,661	366,000	95,754	61,142
1995 ³	61,413	37,806	583,000	334,074	190,158
1996 ³	64,704	33,152	505,654	230,830	161,108
1997 ³	55,654	13,374	553,774	229,868	98,220
1998 ³	34,138	24,537	388,608	156,802	78,664

US Census Bureau's American Housing Survey

(<http://www.census.gov/hhes/www/housing/ahs/ahs.html>)

Introductory Characteristics, 2007

(<http://www.census.gov/hhes/www/housing/ahs/ahs07/ahs07.html>)

Table 1A-1. **Introductory Characteristics--All Housing Units**
 [Numbers in thousands. Weighting consistent with Census 2000. ... means not applicable or sample too small]

Characteristics	Total housing units	Seasonal	Total	Year-round			
				Occupied			Vacant
				Total	Owner	Renter	Total
Total	128,203	4,402	123,801	110,692	75,647	35,045	13,109
Units in Structure							
1, detached	80,406	2,651	77,755	71,435	62,512	8,923	6,320
1, attached	7,135	210	6,925	6,083	4,042	2,040	843
2 to 4	10,515	196	10,319	8,790	1,414	7,376	1,528
5 to 9	6,200	107	6,093	5,258	571	4,686	835
10 to 19	5,808	108	5,700	4,697	476	4,221	1,003
20 to 49	4,609	194	4,415	3,645	489	3,155	770
50 or more	4,826	203	4,623	3,866	723	3,143	757
Manufactured/mobile home or trailer	8,705	733	7,972	6,919	5,419	1,500	1,053
Cooperatives and Condominiums							
Cooperatives	848	88	760	664	424	240	96
Condominiums	8,445	664	7,782	6,413	4,276	2,136	1,369

Hybridcars.com – Hybrid sales numbers

(<http://www.hybridcars.com/market-dashboard.html>)

Hybrids sold in the US (September 2009): **19,997**

US hybrid sales for September 2009

Model	Units	vs. last month	vs. September 2008	CYTD	vs. CYTD 2008
Prius	10,984	-41.8%	1.0%	104,794	19.7%
Insight	1,746	-58.7%	n/a	15,791	n/a
HS250h	1,242	-128.7%	n/a	1,785	n/a
RX400h	1,168	-33.4%	57.0%	10,089	-19.3%
Fusion	1,116	-52.6%	n/a	11,468	n/a
Camry	872	-58.8%	68.7%	18,502	-53.1%
Escape	787	-54.0%	-11.5%	12,009	-8.9%

Highline's Math 081 Grade Analysis 2004/5 – 2007/8

(2004-08 Grade n Wdwl document in Dev Ed folder, produced by Tonya Benton)

GPA	A45 (430)	A56 (488)	A67 (413)	A78p (382)
0-1.69	24.0	34.6	29.8	35.9
1.70-2.00	10.0	9.4	10.9	10.7
2.01-2.50	14.7	13.3	11.9	10.7
2.51-3.00	16.7	13.9	16.7	16.0
3.01-3.50	17.0	12.7	13.3	13.1
3.51-4.00	17.7	16.0	17.4	13.6

Numbers are percentages

Achieving the Dream data on Mentoring Intervention

(AtD Math Yr 1 Data document, produced by Tonya Benton)

Table 1: Summary of characteristics of Intervention group (I) vs. Comparison group (C).

Characteristics	I (n = 32)		C (n = 531)	
	n	%	n	%
Primary Outcomes				
Withdrew from MATH in Fall	4	12.5	88	16.6
MATH Grade of 2.0+ in Fall	22	68.8	247	46.5
Enrolled in next MATH in Winter	16	50.0	195	36.7
Enrolled in next MATH in Spring ^a	13	40.6	139	26.2
Demographics				
Enrolled in 091 vs 097	14	43.8	241	45.4
Ethnic Minority ^b	14	45.2	236	47.3
Female	21	65.6	342	64.4
"Regular" student (not RS, etc)	25	78.1	479	90.2
PT employed off campus	15	46.9	190	35.8
US Citizen	25	78.1	429	80.8
Less than HS education	10	31.3	100	18.8
New student in A782	14	43.8	159	29.9

^aThis is a preliminary enrollment figure for Spring 2008.

^bPercentages for ethnicity are based on number of non-missing cases.

US Dept of Ed, Nat'l Center for Education Statistics

Digest of Ed Stats (<http://nces.ed.gov/programs/digest/>) – Go to list of tables by chapter, click on “Postsecondary Education” or try FastFacts (<http://nces.ed.gov/fastfacts/display.asp?id=72>)

Average undergraduate tuition and fees

(http://nces.ed.gov/programs/digest/d08/tables_3.asp#Ch3aSub6, table 331)

Table 331. Average undergraduate tuition and fees and room and board rates charged for full-time students in degree-granting institutions, by type and control of institution: 2007–08																		
Year and control of institution	Constant 2006–07 dollars			Current dollars														
	Total tuition, room, and board			Total tuition, room, and board					Tuition and required fees (in-state for public institutions)					Dormitory rooms				
	All institutions	All 4-year	2-year	All institutions	4-year institutions			2-year	All institutions	4-year institutions			2-year	All institutions	4-year institutions			2-year
					All 4-year	Universities	Other 4-year			All 4-year	Universities	Other 4-year			All 4-year	Universities	Other 4-year	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
All institutions																		
1976–77	\$7,914	\$8,963	\$5,558	\$2,275	\$2,577	\$2,647	\$2,527	\$1,598	\$924	\$1,218	\$1,210	\$1,223	\$346	\$603	\$611	\$649	\$584	\$503
1977–78	7,857	8,881	5,552	2,411	2,725	2,777	2,685	1,703	984	1,291	1,269	1,305	378	645	654	691	628	525
1978–79	7,708	8,694	5,448	2,587	2,917	2,967	2,879	1,828	1,073	1,397	1,370	1,413	411	688	696	737	667	575
1979–80	7,386	8,328	5,205	2,809	3,167	3,223	3,124	1,979	1,163	1,513	1,484	1,530	451	751	759	803	729	628
1980–81	7,308	8,247	5,256	3,101	3,499	3,535	3,469	2,230	1,289	1,679	1,634	1,705	526	836	846	881	821	705

National Automotive Dealers Association – Vehicle Sales and Market Share

http://www.nada.org/Publications/NADADATA/monthly_sales_recap/

September 2009 Sales Recap

NADA Industry Analysis

Industry

Top 10 Most Sold - Current Month

	Sept. YTD '09	Sept. YTD '08	Chg.	Sept. '09	Aug. '09	Chg.
Car	4,141,671	5,601,340	-26.1%	398,235	721,843	-44.8%
Truck	3,654,148	5,123,853	-28.7%	344,331	538,514	-35.7%
Total	7,795,819	10,725,193	-27.3%	744,566	1,260,357	-40.9%
Sept. SAAR: 9.2M (Aug 14.1, July 11.1, June 9.6/May 8.6/April 9.6/March 9.8/Feb. 9.1M)						
Share of Industry						
	2009	2008	Chg.	Sept. '09	Aug. '09	Chg.
Detroit 3	44.5	48.0	-3.5	44.5	41.1	3.4
Japanese	40.5	40.0	0.5	39.7	44.4	-4.7
European	7.2	6.5	0.7	8.5	6.2	2.3
S. Korea	7.5	5.2	2.3	7.1	8.0	-0.9
Total	99.7	99.7		99.8	99.7	

Note: Table Totals not included in total

Market Share By Group

	2009	2008	Chg.	Sept. '09	Aug. '09	Chg.
GM	19.7	22.5	-2.8	20.9	19.5	1.4
Toyota	16.6	16.7	-0.1	15.9	17.9	-1
Ford	15.7	14.5	1.2	15.2	14.3	0.9
Chrysler	9.1	11.0	-1.9	8.3	7.4	0.9
Honda	11.3	11.0	0.3	10.4	12.1	-1.7
Nissan	7.4	7.3	0.1	7.4	8.4	-1
Hyundai	7.5	5.2	2.3	7.1	7.5	-0.4
Total	87	88		86	87	

Market Share Big 6 Brands

	2009	2008	Chg.	Sept. '09	Aug. '09	Chg.
Toyota	14.7	14.8	-0.1	14.5	16.1	-1.6
Ford	13.4	12.3	1.1	13.1	12.7	0.4
Chevrolet	12.7	13.5	-0.8	13.7	13.3	0.4
Honda	10.4	9.9	0.5	9.4	12.0	-2.6
Nissan	6.7	6.5	0.2	6.6	7.7	-1.1
Hyundai	4.4	3.1	1.3	4.2	4.8	-0.6
Total	62.3	60.1		66.6	66.6	

Car	Sept. '09	Aug. '09	Chg.	Trucks	Sept. '09	Aug. '09	Chg.
Camry	25,745	54,396	-52.7%	F Series	33,677	45,500	-25.7%
Corolla/Matrx	20,741	43,061	-51.8%	Silverado	19,401	32,421	-40.2%
Accord	20,826	39,726	-47.6%	Ram	13,452	17,514	-23.2%
Civic	16,093	43,294	-62.8%	CRV	11,322	23,695	-52.2%
Impala	13,047	20,473	-36.3%	Escape	8,692	20,933	-58.5%
Altima	12,149	26,833	-54.7%	Tacoma	7,513	12,547	-40.1%
Prius	10,984	18,886	-41.8%	Tahoe	7,304	6,008	21.6%
Fusion	10,834	21,010	-48.4%	GMC Sierra	7,304	6,008	21.6%
Malibu	10,479	17,348	-39.6%	Santa Fe	7,010	10,791	-35.0%
Jeeta	9,568	12,872	-25.7%	Traverse	6,863	11,465	-40.1%
Total	150,466	297,899	-49.5%		122,738	166,972	-34.4%
% of Industry	20.2%	23.6%			16.5%	14.8%	

Share by Segments % of Industry

	YTD '09	YTD '08	Vol. Chg.	Sept. '09	Aug. '09	Vol. Chg.
Small Car	20.6	19.5	-22.7%	17.5	26.8	-33.6%
Midsize Car	22.0	21.6	-26.1%	23.1	22.9	-36.0%
Large Car	3.0	3.5	-36.9%	4.3	2.0	-33.9%
Luxury Car	7.4	7.6	-29.7%	8.6	5.7	-7.9%
CUV	21.5	18.0	-13.1%	20.4	22.1	-42.8%
SUV	6.5	8.7	-46.2%	7.7	4.4	8.1%
Small Van	4.1	4.5	-34.7%	3.3	3.3	-39.7%
Large Van	1.6	1.8	-37.4%	1.7	1.0	2.6%
Small P/U	2.7	3.0	-35.5%	2.2	2.7	-50.0%
Large P/U	10.4	11.5	-34.9%	11.1	9.1	-26.3%
Total	100	100		100	100	

Note: Volume chg. Reflects actual change in volume year-over-year and Sept. vs. Aug. '09

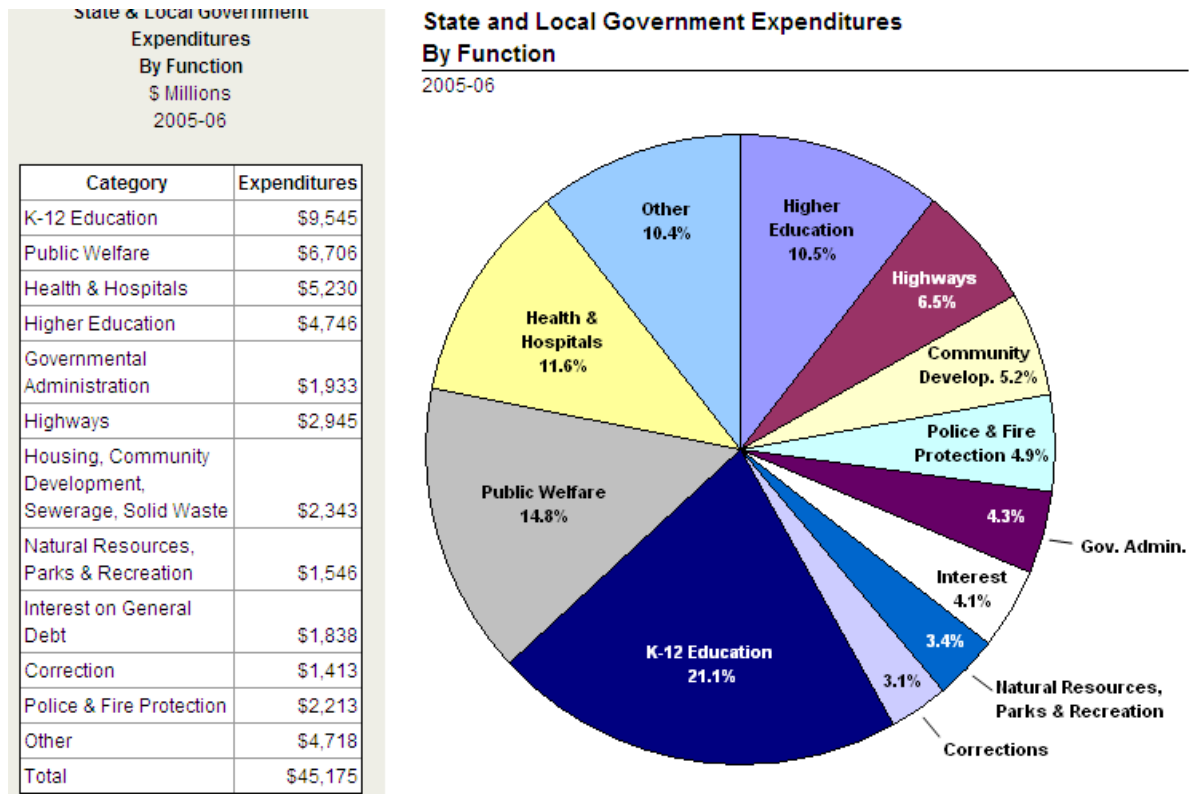
Hybrid Sales

	2009	2008	Chg.	2009	2008	Chg.
Hybrid Car	179,913	208,634	-14%	16,837	32,507	-49%
Hybrid Truck	40,674	50,887	-20%	3,140	5,894	-47%
Total	220,587	259,521	-15%	19,977	38,701	-48%

Source: Ward's Auto Data. Share by group depicts all brands owned by parent company

Source: Washington State Office of Financial Management

(<http://www.ofm.wa.gov/trends/tables/fig506.asp>)



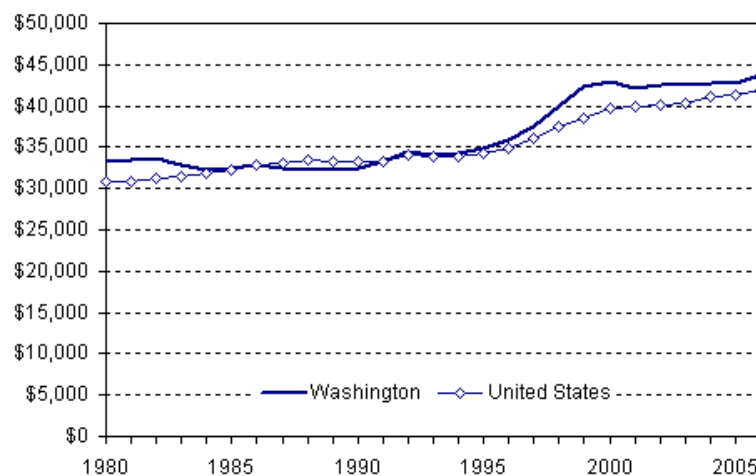
Source: Washington State Office of Financial Management

(<http://www.ofm.wa.gov/trends/tables/fig506.asp>)

Washington and U.S. Average Wage

1980-2006

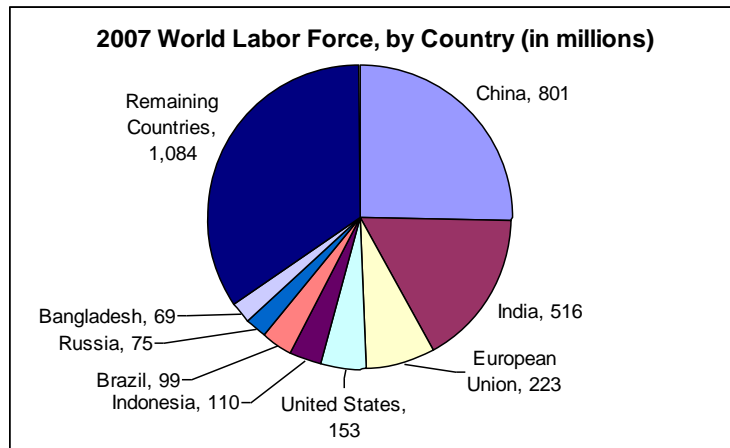
Inflation-Adjusted to 2006 Dollars



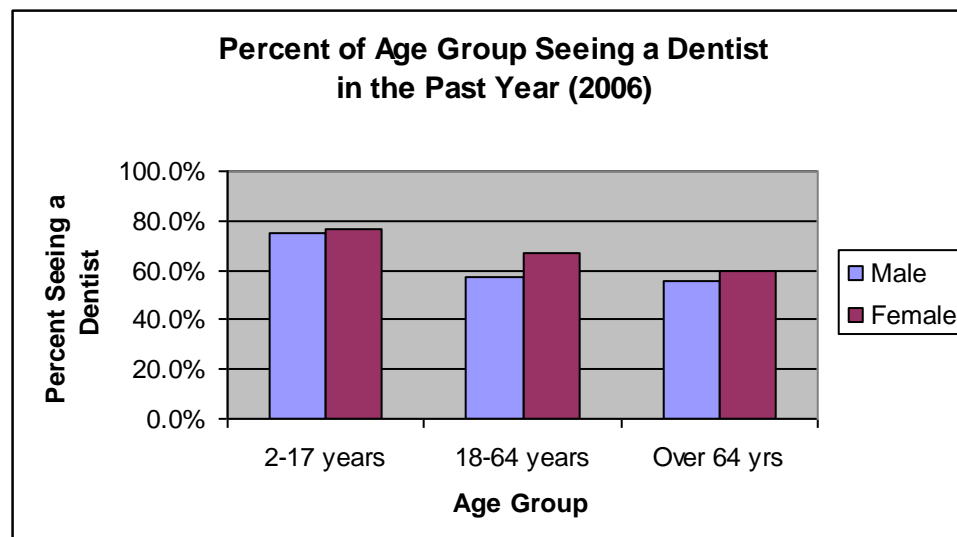
Top 10 Broadcast TV Programs for the week of January 12, 2009 (Live+SD)

Rank*	Program	Network	Rating**	Viewers***	Chart by Rating
1	AFC CHAMPIONSHIP ON CBS(S)	CBS	22	40.645	
2	AMERICAN IDOL-WEDNESDAY	FOX	16.4	30.322	
3	AMERICAN IDOL-TUESDAY	FOX	15.8	30.424	
4	AFC CHMP POST GAME ON CBS(S)	CBS	14.5	25.441	
5	CSI	CBS	14.4	24.246	
6	NCIS	CBS	11.3	18.62	
7	MENTALIST, THE	CBS	11	18.069	
8	TWO AND A HALF MEN	CBS	10.2	17.102	
9	CSI: MIAMI	CBS	10.1	15.83	
10	MENTALIST, THE-SUN SPCL(S)	CBS	10	16.387	

CIA World Factbook



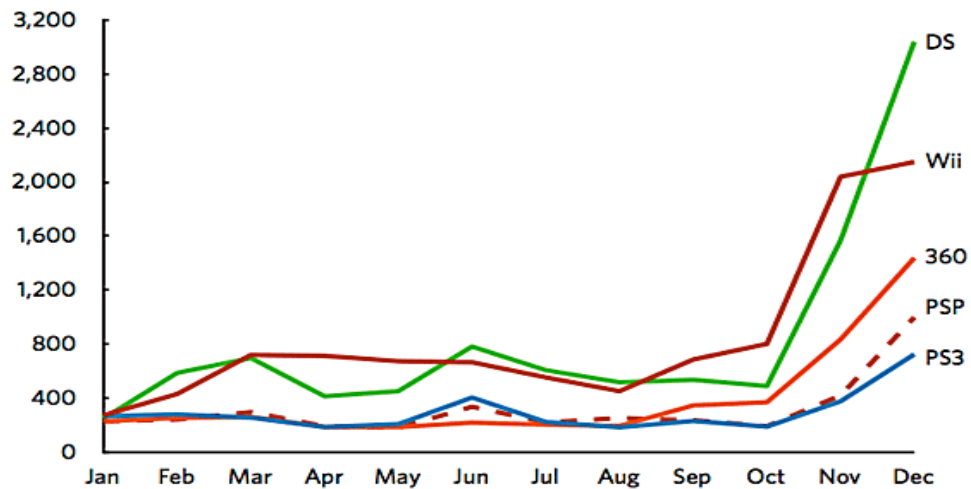
National Center for Health Statistics



NPD Group

2008 console sales

Thousands



Source: <http://www.acaloriecounter.com/fast-food.php>

Fast Food Restaurant	Type	Serving Size (g)	Calories	Total Fat (g)	Saturated Fat (g)	Trans Fat (g)	Carbs (g)	Sodium (mg)
Burger King	Whopper	290	670	39	11	1.5	51	1020
Burger King	Whopper Jr.	158	370	21	6	0.5	31	570
Hardee's	Thickburger	349	910	64	21	Unknown	53	1560
Hardee's	Six Dollar Burger	412	1060	73	28	Unknown	58	1950
Jack in the Box	Jumbo Jack	261	600	35	12	1.5	51	940
Jack in the Box	Sourdough Jack	245	710	51	18	3	36	1230
McDonald's	Big Mac	214	540	29	10	1.5	43	1040
McDonald's	Big N' Tasty	206	460	24	8	1.5	37	720
Wendy's	Single	Unknown	430	20	7	1	37	900
Wendy's	Double (cheese)	Unknown	700	40	16	2.5	38	1500

Source: U.S. Department of Education, National Center for Education Statistics

<i>Total fall enrollment in degree-granting institutions, by sex of student and attendance status: Selected years, 1970 through 2005</i> [In thousands]						
Sex and attendance status	Degree-granting institutions					
	2000	2001	2002	2003	2004	2005
Total	15,312	15,928	16,612	16,911	17,272	17,487
Sex						
Males	6,722	6,961	7,202	7,260	7,387	7,456
Females	8,591	8,967	9,410	9,651	9,885	10,032
Attendance status						
Full-time	9,010	9,448	9,946	10,326	10,610	10,797
Part-time	6,303	6,480	6,665	6,586	6,662	6,690

Source: <http://www.boxofficemojo.com/>

Rank*	Title (Click to view chart)	Friday 16-Oct	Saturday 17-Oct	Sunday 18-Oct
1	WHERE THE WILD THINGS ARE	\$12,077,282	\$12,335,551	\$8,282,574
2	PARANORMAL ACTIVITY	\$6,768,833	\$7,744,963	\$5,103,854
3	LAW ABIDING CITIZEN	\$7,727,872	\$8,249,368	\$5,062,262
4	COUPLES RETREAT	\$5,792,505	\$7,643,005	\$3,791,880
5	CLOUDY WITH A CHANCE OF MEATBALLS	\$2,092,235	\$3,685,232	\$2,240,404
6	THE STEPFATHER (2009)	\$4,368,209	\$4,989,750	\$2,223,627
7	ZOMBIELAND	\$2,401,499	\$3,331,306	\$1,884,134
8	TOY STORY / TOY STORY 2 (3D)	\$839,665	\$1,315,383	\$861,532
9	SURROGATES	\$587,211	\$865,832	\$464,272
10	THE INVENTION OF LYING	\$613,094	\$867,036	\$427,268

Source: Energy Information Administration

(http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

	9/14/2009	9/21/2009	9/28/2009	10/5/2009	10/12/2009	10/19/2009
U.S.	249.9	247.7	242.5	239.6	243.2	253.2
West Coast	290.5	289.6	284.9	279.3	274.7	272.5
West Coast (less California)	290.5	289.6	284.9	279.3	274.7	272.5
Washington	296	295.9	291.5	284.5	278.3	275.1
Seattle	292.5	292.6	288.2	283.1	276.2	273.1

Source: Cannot locate

WA Ferries Revenue Sources (1999)	Amount
Fares	90500
State Motor Vehicle Excise Tax	31110
State Motor Fuel Tax	16590
Vehicle License Fees	5992
Treasury Deposit Earnings	5763
Other Income	957

Source: Office of Superintendent of Public Instruction

(<http://reportcard.ospi.k12.wa.us/summary.aspx?year=2008-09>)

Grade Level	Reading	Math	Writing	Science
4th Grade	73.6%	52.3%	60.4%	
5th Grade	74.0%	61.9%		44.9%
7th Grade	59.3%	51.8%	69.8%	
8th Grade	67.5%	50.8%		51.1%
10th Grade	81.2%	45.4%	86.7%	38.8%

Table H-8. Median Household Income by State: 1984 to 2007

(Households as of March of the following year. Income in current and 2007 CPI-U-RS adjusted dollars.)

State	Median Income (in 2007 U.S. dollars)		
	2007	2006	2005
Alaska	\$62,993	\$58,019	\$59,361
Arizona	\$47,215	\$47,981	\$48,054
California	\$55,734	\$56,888	\$54,968
Colorado	\$61,141	\$57,277	\$53,581
Idaho	\$49,184	\$47,524	\$46,919
Nevada	\$54,058	\$53,765	\$51,202
Oregon	\$50,236	\$48,427	\$46,901
Utah	\$53,529	\$56,178	\$58,216
Washington	\$58,080	\$56,275	\$53,790

Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements.

<http://www.census.gov/hhes/www/income/histinc/h08.html>

2007 Annual Report: Expenditures on Children by Families

Age of Child	Average Annual Cost for Families with Incomes < \$45,000				Child care	Total per Year
	Housing	Food	Health care			
0 - 2	\$2,970	\$1,070	\$600		\$1,220	\$7,830
3 - 5	\$2,930	\$1,190	\$570		\$1,370	\$8,020
6 - 8	\$2,830	\$1,530	\$650		\$810	\$8,000

Source: United States Department of Agriculture, Center for Nutrition Policy and Promotion

<http://www.cnpp.usda.gov/Publications/CRC/crc2007.pdf>

Non-U.S. Facebook Members, by Country (Nov. 2007)

Country	Millions of Members
Australia	1.920
Canada	6.651
France	0.772
Germany	0.366
India	0.334
Japan	0.109
Mexico	0.436
United Kingdom	6.826